

Principles of Chemical Management in the Textile and Garments Industry in Bangladesh

Promotion of Sustainability in the Textile and Garment Industry in Asia - FABRIC

Structure – Overall

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<ul style="list-style-type: none">▪ Foreword▪ Preface▪ General provisions▪ Objective▪ Scope of the guideline▪ Vision▪ Mission/objective▪ Definitions	<p>10 Technical Chapters Covering</p> <ol style="list-style-type: none">1. Good chemical management practices2. Using reliable information sources on chemical substances and mixtures3. Identifying and assessing chemical hazards and risks4. Selecting and purchasing chemicals with consideration of sustainability aspects5. Managing and controlling chemicals risks6. Ensuring safe storage and transport of chemicals7. Preparing and responding to chemical emergencies8. Managing chemical waste and residues9. Establishing chemical management system and organisational structure10. Other (e.g. chemical security)	<ul style="list-style-type: none">▪ Annexes▪ Glossary/Index

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7. Preparing and responding to chemical emergencies

7.1 Planning and preparing for chemical emergencies

7.1.1 The factory shall create a formal Emergency Response Procedure. After a thorough review, this shall include crisis planning in **the event of a fire, chemical leaks, spills and splashes, and other medical emergencies**. It could also include plans for dealing with damage to structures and people caused by large external disasters like earthquakes, flooding, civil unrest, tsunamis, or industrial gas releases.

7.1.2 These scenarios shall at least include (i) accidental on and offsite releases during storage, transport, handling and disposal of chemicals (such as leaks and spills, the release of untreated wastewater due to break-down of effluent treatment plant) (ii) fire and explosions involving chemicals and (iii) medical emergencies involving exposure to chemicals at the workplace or in confined spaces.

7.1.3 For each of the chemical emergency scenarios identified, the factory shall decide on and select measures to eliminate or reduce the probability of such emergencies happening as well as to prepare to respond to such chemical emergencies. These shall include the preparation of an **onsite emergency response plan (ERP)** according to Schedule 6 of Hazardous waste and ship-breaking waste management rules 2011 and making available necessary emergency response provisions.

7.1.4 Emergency response arrangements shall reflect the corresponding recommendations for emergency measures and provisions as instructed in the SDS, in particular section 4 on first aid measures, section 5 on fire-fighting measures and section 6 on accidental release measures.

7. Preparing and responding to chemical emergencies

7.1 Planning and preparing for chemical emergencies

7.1.5 As part of the emergency preparedness measures, **all workers shall be trained in the relevant procedures by the competent trainers**. This shall at least include training and drills on

- a. Arrangements for raising alarms
- b. Arrangements for calling appropriate emergency assistance (onsite, offsite) in event of a fire or medical emergency
- c. The use of appropriate PPEs and its limitations in emergency situations
- d. The evacuation of the work areas, premises and establishment and the location of emergency exits, escape routes and assembly points
- e. Taking action to minimize the chemical incidents (e.g., Tackling fire, controlling leaks and spills, emergency shut-downs, removal of certain chemicals in case of a fire, providing and initiating basic first aid measures).

7.1.6 Emergency related training shall be part of every worker's induction and (at least) annual refresher trainings and put on the training record.

7.1.7 If there is a possibility that emergency **situations may affect people and property outside the factory**, the factory shall take steps to establish appropriate procedures on consultation with the national or local authorities and emergency services. For further reference see Bangladesh National Building Code (BNBC), ILO code of practice on Prevention of major industrial accidents as well as UNEP handbook on Awareness and preparedness of emergencies at local level (APELL).

7.1.8 For possible emergencies, an '**Emergency Response Team**' with specified roles and tasks shall be developed. The names and phone numbers of the team members shall be displayed prominently throughout the facility. A 'Command and Coordination' structure shall be in place, with individuals trained in emergency protocols and mitigation

7. Preparing and responding to chemical emergencies

7.2 Dealing with fire and explosions

7.2.1 Fire alarm systems (both sound and light) should be available in the factory and these must be distinct from other alarms and notification systems.

7.2.2 Suitable and adequate fire-fighting equipment should be available on-site transport and storage. Basic requirements are also discussed in BNBC 2020.

7.2.3 Portable fire-fighting extinguishers (suitable for types of fire Class A, B, C or D) should be available for first-stage fire-fighting purposes, and the **extinguishing medium should be selected as a result of the assessment of risks and control measures**.

7.2.4 Fire-fighting and fire-protection equipment should be maintained in full working order, which should be ensured by regular inspection.

7.2.5 **Automatic sprinkler system should be available at the place** where flammable chemicals are stored.

7.2.6 There should be **emergency lights** and emergency exit signs as well as “**No Smoking**” signs within the factory.

7.2.7 **Sand buckets, hydrants and fire hoses should be available** at chemical stores and other high-risk areas in the factory.

7.2.8 Adequate drainage from the workplace should be provided to deal with water used for fire protection and fire-fighting to minimize environmental damage. Interceptors or special drainage systems, particularly at large installations, should be provided to minimize the risk of contamination of local water courses.

7. Preparing and responding to chemical emergencies

7.2 Dealing with fire and explosions

7.2.9 Fire-proof electrical wiring cables should be used to avoid short-circuit and explosion-proof lighting should be installed in chemical stores

7.2.10 Regular fire drills and training of staff on use of fire equipment and evacuation methodology should be given to workers about the hazards of fires involving chemicals and the appropriate precautions to be taken. The training, instruction and information provided should include:

- a. not putting themselves unnecessarily at risk;
- b. when and where to raise the alarm;
- c. the use of fire-fighting and fire protection equipment, for workers expected to use it;
- d. the toxic nature of the fumes given off and first-aid measures;
- e. the proper use of appropriate personal protective equipment;
- f. evacuation procedures;
- g. the circumstances in which workers should not attempt to deal with a fire themselves but should evacuate the area and call in specialist trained firefighters.

7.2.11. Adequate information to enable adequate precautions to be taken should be given to trained fire-fighters and other emergency responders coming from offsite about the nature of the chemical fire and its hazards

7. Preparing and responding to chemical emergencies

7.3 Dealing with chemical spills and leaks

7.3.1. Spillage can happen occasionally in the industries during handling and transportation. Spillages can be prevented by:

- a) Checking containers on delivery for any cracks or damage before storage
- b) Ensuring safe handling practices (such as mechanised or manually-driven trolleys) for internal movement of chemical containers
- c) Proper stacking of containers in slotted angle racks in the chemical stores to prevent their falling over

7.3.2. In case of any spillage of chemicals, following facilities should be available to contain the spillage in line with the recommendations of the corresponding SDS:

- a) A **secondary containment** for chemical containers to arrest the spread of spillage
- b) A **standard spill control kits** containing sawdust, sand or any other absorbent container to absorb the liquid spill, broom, shovel and gloves, an empty **container marked "Hazardous Waste"** and a trolley to keep these items (for taking them quickly to the spillage place).
- c) Safety Data Sheet (SDS) and manufacturer's instructions describing the corrective action
- d) Personal protective equipment to be used during clean-up.

7. Preparing and responding to chemical emergencies

7.3 Dealing with chemical spills and leaks

7.3.3. The following procedure can be followed to contain **any chemical spillage**:

- a) The spillage incident should be communicated to the stores in-charge person.
- b) The 'Spill Kit' should be moved to the place of spillage as soon as possible.
- c) Sand or other absorbent material should be sprinkled around the outskirts of the spill area to stop the flow or spread, in case of a liquid spill.
- d) Absorbent material should be sprinkled on the complete area of the spill to absorb the spill.
- e) The broom and shovel should be used to collect the material containing the spilled chemical, using protective gloves.
- f) The collected waste should be transferred to the plastic container marked "hazardous waste".
- g) The spilled waste should be sent to hazardous waste storage area for disposal to an authorized third-party waste contractor.
- h) Spills should not be washed away with water. If liquid spills enter drains, these should be connected to the effluent treatment plant.
- i) The spill kit should be returned to the allocated place at the stores.

7.3.4. Standard procedures **for reporting and response** to (minor and major) chemical spills and leaks, including assignment of roles and responsibilities should be ready beforehand.

Template 6: Chemical Accident and Incident Log Book

Description of the accident/incident

SI	Victim's info		Accident/ Incident info		Accident/Incident detail			Treatment info		
	Name		Date		Severity (tick)	Affected organ of victim person	Death (Yes/No)	Hospital/ Clinic where treatment taken place	Doctor/Assistant conducting the treatment	
	ID		Time		high					
	Section		Location		medium					
	Designation				low					
	How much percentage of earning capability worker has lost due to the accident/incident									
	Date of return to the workplace									
	How much time/day worker had to be absent due to the accident/incident									
	Compensation that has been given from company									

7. Preparing and responding to chemical emergencies

7.3 Dealing with chemical spills and leaks

7.3.5. As part of the preparations, the management should establish and implement **in-house training program to deal with chemical spillage**. Such a training program may include the following:

- a) arrangements for raising the alarm
- b) calling on the appropriate emergency assistance
- c) use of appropriate personal protective equipment (and its limitations) while dealing with the emergencies
- d) actions to evacuate anyone in immediate danger
- e) the provision of life-saving first aid
- f) the use of specialized equipment and materials including first-aid, fire-fighting, and spill and leak control equipment;
- g) actions to minimize the magnitude of the incident
- h) actions to evacuate adjacent premises when necessary

7.3.6. **In case of any solid chemical spills, that should not be wash away and should be removed in dry form**. Solid contaminated material should be collected in “old-open Top drums” until final disposal. Finally, it should be disposed according to the manufacturer’s suggestion

7. Preparing and responding to chemical emergencies

7.4 Dealing with medical emergencies involving chemicals

7.4.1 The possible medical emergency situations in the workplace should be assessed in advance using the information in the **SDS and chemical inventory and areas with risk of medical emergencies** in the factory be mapped out.

7.4.2 Adequate first-aid arrangements should be available in the workplace that considers the hazardous chemicals used at work, ease of communications, and the emergency services and facilities available, corresponding to the recommendations in the SDS.

7.4.3 **Trained personnel for rendering first aid should be readily available at all times during the use of (hazardous) chemicals at work.** Trained personnel include persons trained in first aid, registered nurses or medical practitioners.

7.4.4 Where hazardous chemicals are used, first-aiders should be trained as regards:

- a) the hazards associated with the chemicals and how to protect themselves from these hazards;
- b) how to take effective action immediately;
- c) any relevant procedures associated with sending a casualty to further medical treatment (e.g., hospital)

7.4.5 The employer or competent personnel on behalf of the employer shall assess the first-aid needs taking into account (i) possible number of employees affected at a time, (ii) the nature of the work activity (iii) the size of the factory and distribution of workers at the factory, (iv) the situation of the work activity/factory in relation to the nearest hospital or emergency medical services that may be required.

7.4.6 The first equipment and facilities (such as first-aid boxes, eye wash stations and emergency showers) should be appropriate for dealing with the chemical hazards encountered in the use of chemicals at work as well as in line with the recommendations of the chemical's SDS.

7. Preparing and responding to chemical emergencies

7.4 Dealing with medical emergencies involving chemicals

7.4.7 **Any first-aid box** should contain at minimum bandages and/or dressings, antiseptic cream or spray and disinfectant liquid, sterile gauze pads and cotton swab or cotton wool, burns dressing and gel, adhesive tape and scissors, disposable gloves and pain killer medicine. Additional provisions should be included if so, recommended by the SDS of chemicals used in the respective area.

7.4.8. For first-aid measures, factory should follow the below steps:

- a) Identify and train first-aid Personnel from the staff
- b) Display the names and photos of the trained staff prominently at key locations
- c) Ensure that at least one trained staff member is present on each work shift
- d) Clearly mark where the first-aid box is placed and ensure that this is not locked and is easily accessible to workers
- e) Inspect the first-aid box at least monthly, replace used or expired items and update the inspection tag
- f) Provide written first-aid instructions in local language near the first-aid box
- g) Display the contact details of ambulance providers and nearest hospital or central emergency number
- h) Where possible, provide a medical room to which a member of staff can be moved to await doctor or ambulance
- i) Place an incident logbook next to the First-Aid box to record any incidents

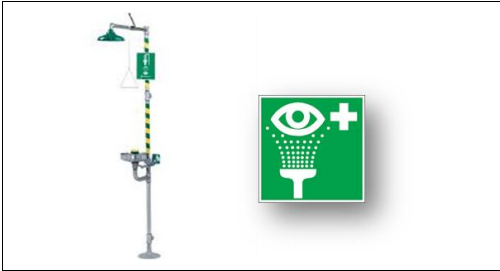
7. Preparing and responding to chemical emergencies

7.4 Dealing with medical emergencies involving chemicals

7.4.9. Where recommended by the SDS, eye wash and body shower stations should be installed at key locations such as in the chemical stores and production areas with proper signages for easy identification to allow for immediate cleansing eyes or skin affected by any splashes of chemicals.

7.4.8 The factory shall refer to the following guidelines to determine the location and arrangement of eye wash and body shower stations:

- Eye wash units and body showers both should be located within 10 seconds (or approximately 55 feet) of unimpeded travel distance from any work areas where corrosive material hazard are prevalent or, as recommended by a physician or appropriate official.**
- These should be placed in a well-lit area and identified with signage.
- These should be located on the same floor level as the hazard area**
- Eye wash units and body showers should have adequate continuous supply of water at the right temperature and pressure.
- The proper functioning of the eye wash units and body showers should shall be verified at the beginning of each shift

	<p>Requirements as per ANSI Z358.1-2014 (Example)</p> <p>Safety shower</p> <ul style="list-style-type: none">- 75 liters/minute at 2 bars <p>Eye-wash station</p> <ul style="list-style-type: none">- 1.5 liters/minute at 2 bars <p>Combined interrupted flow of a minimum of 15 minutes</p>
<p>Figure 1 – Safety shower/emergency eye wash station</p> <p>Source: e-REMC materials by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)</p>	

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